

TO buy or not to buy?

—Case study on Western books interlibrary loan of the Peking University Library

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Abstract

Interlibrary Loan (ILL) borrowing requests in Peking University Library are mainly focused on the Western Books. The analysis in this paper was based on the borrowing requests of ILL for Western books in the past five years and by comparison with the internal Western Book collection utilization. An investigation of relationship between ILL service and internal collection development was performed. Finally a development strategy of Western Books ILL service in Peking University was proposed based on the investigation above.

Key Words: interlibrary loan, western books, collection development

1. Introduction

Interlibrary loan (ILL) is one of the critical divisions of library services. An ILL request can be made when a book requested by a patron is not available internally. Then the librarians can borrow the book from other libraries through interlibrary loan system and deliver it to the patron. While handling such interlibrary loan requests, librarians are facing a decision making whether to turn the ILL request into an internal collection request, which means taking the ILL requests as one of the initiatives to build the internal collection. This acquisition method is also known as "ILL-related POD" (Tyler DC. (2011), Gerrit van Dyk. (2011)).

As one of Patron-Driven Acquisition (PDA) methods, ILL-related POD has been implemented in many libraries domestically (Chan, GRYC. (2004), Anderson, K. J (2002),). However, there is lack of a unique acknowledged standard to be followed, currently different libraries utilize the ILL POD program based on their own situations with different policies.

By taking Western Books as a research object, the authors of this paper analyzed the inter library loan requests in Peking University Library in the past five years (2008-2012), and compared the amount of ILL borrowing request with the circulation of internal western book collection. Based on this, to buy or not to buy an inter library loan book was discussed along with a comprehensive consideration of various factors including collection development policy, the needs of patrons, library funding, storage space and so on. Finally, the authors proposed the development strategy of Interlibrary Loan service on western Books based on study above.

2. Study Limitation & Methodology

Study Limitation

In 1998, the interlibrary loan and document delivery department was established in

Peking University Library (Abbr. PUL). Since then, the department has handled tens of thousands of ILL requests (including books, photocopies of journal articles, photocopies of book chapters, theses which are allowed to be circulated). Two thirds of these requests are book loaning requests which again are mainly western books. In this paper, the research objects of Western Books being studied include books in English, German, French language. It's well known that the western books are significantly valuable for research staff, postgraduates, undergraduate students and other non-teaching staff. However, due to the much higher cost and longer acquisition time of western books collection relative to Chinese Books, the western book circulation is much slower (e.g. the circulation of all books in PUL is nearly 700,000 times per year, and the circulation of western books is less than 100,000 times). In consideration of these two specific characteristics of western books, this study is focusing on the analysis of the western books requested via ILL, and to answer "to buy or not to buy". This study will have significantly practical impacts on research relevant libraries, such as PUL, and can be a reference for other types of libraries as well.

Study Data

The data in the study includes three aspects:

- The internal collection of western books at PUL.
- The western book circulation in PUL from January 2008 to December 2012.
- The inter library loan of western books requested via PUL's ILL department from 2008 to December 2012.

The three aspects represent the situation of the collection-building on western books, the demand and utilization on western books collection from patrons, and the demand and the utilization on ILL western books from patrons in PUL respectively.

The reasons why including data of three aspect for the latest five years (2008-2012) as mentioned above are because: 1. most recent data can reflect the current situation for study, 2. the period of collected data is wide enough (5 years) to better reflect the demand and utilization on western books spanning over the patrons' study and research lifecycle (e.g. Doctor, master or bachelor). Overall, the collected data only include the internal collection and ILL requests at Main Library of Peking University.

Conspectus Subject Categories

This study not only discussed whether it is worth buying a single book on specific issues, but also explored the collection development on various specific subjects and the current situation and policies of interlibrary loan service from macro point of view. Based on the Chinese Library Classification (Chinese Library Classification, Fourth Edition), and further adjusting from the degree settlement by China Ministry of Education, the conspectus subject categories are divided into 24 major disciplines.

Patron Categorization

This study categorized patrons based on departments. As the categorization of departments is not consistent to Conspectus Subject Categories, and there are still different demands on interdisciplinary western books even for patrons from same

department, study can be done based on the patrons' school background. Some smaller schools or institutions are categorized into the "other arts" and "other science" for simplification.

Methodology

This study imported the three aspects of data into Excel forms, along with revised and unified department information of the patrons, and then aggregated the data by the subjects based on index number. Data analysis was done sorting and calculating by the overall situation, the publication year, the subject distribution, the department distribution, and the circulation. And finally a comprehensive comparison between different categories of data was performed.

3. Description of Data

Holdings on Western books

There are totally more than 700000 western books in PUL for circulation. Listed in Table 1 is the summarized western book collection for all 24 subjects along with individual and accumulative percentage sorted by collection number of each subject.

The data shows that the collection building for different subjects was not balanced. The top 6 subjects' collections take up to 60% of the total holdings. It indicates that these subjects are the major subjects for collection-building in PUL with more funding resources being spent.

Table 1: Conspectus Subject Categories of western book

Rank	Conspectus Subject Categories	Titles of Western Books	%	Cumulative %
1	Literature	123411	17.27%	17.27%
2	History	72098	10.09%	27.36%
3	Industrial Technology ¹	67654	9.47%	36.82%
4	Business and Economics	60529	8.47%	45.29%
5	Philosophy and Religions	52573	7.36%	52.65%
6	Politics ²	45217	6.33%	58.97%
7	Physics	29012	4.06%	63.03%
8	Languages and Linguistics	28978	4.05%	67.09%
9	Mathematics	28196	3.95%	71.03%
10	Life Sciences	27891	3.90%	74.94%
11	Chemistry	25121	3.51%	78.45%
12	Culture, Science and Sports	23117	3.23%	81.69%
13	Law	18988	2.66%	84.34%
14	Social Sciences	17086	2.39%	86.73%
15	Education	16974	2.38%	89.11%

¹ Including subjects of Industrial Technology, Aviation and Aerospace, Transportation

² Including subjects of Politics, Military Science

16	Astronomy and Geoscience	14944	2.09%	91.20%
17	Medicine and Health Sciences	13401	1.88%	93.07%
18	Art	13370	1.87%	94.94%
19	Psychology	10406	1.46%	96.40%
20	Marxism ³	7722	1.08%	97.48%
21	Natural Science	5219	0.73%	98.21%
22	Geography	4729	0.66%	98.87%
23	General Works	4515	0.63%	99.50%
24	Environmental Science	3542	0.50%	100.00%

Circulation Data

During the past five years (2008-2012), there were totally 123,000 items of Western Books being checked out. The total transactions were about 411000 times, with average transactions per item being 3.3times. (Table 2)

Table 2: Average Number of Transactions per Item by Subject

Conspectus Subject Categories	Circulation Transactions	Circulating Titles	Average transactions per item
Literature	72054	21387	3.37
Philosophy and Religions	56062	14960	3.75
Business and Economics	43242	12999	3.33
Politics	40320	12744	3.16
History	31688	11526	2.75
Physics	23908	5784	4.13
Languages and Linguistics	22521	4898	4.60
Mathematics	19244	5138	3.75
Law	16606	4779	3.47
Social Sciences	13529	4367	3.10
Industrial Technology	13039	4007	3.25
Culture, Science and Sports	11609	3951	2.94
Life Sciences	9464	3367	2.81
Art	6969	2288	3.05
Chemistry	6771	2390	2.83
Psychology	6219	1942	3.20
Astronomy and	5254	1729	3.04

³ Including subjects of Marxism, Leninism, Maoism & Deng Xiaoping Theory

Geoscience			
Medicine and Health Sciences	3638	1483	2.45
Environmental Science	2397	902	2.66
Natural Science	2031	804	2.53
Education	1779	781	2.28
Geography	1639	633	2.59
Marxism	1253	506	2.48
General Works	641	250	2.56
Total	411877	123615	3.33

Interlibrary Loan Data

From 2008-2012, the ILL requests on western book were totally 14377. (see Table 3)

Table 3:2008-2012 ILL Borrowing on western book

	ILL Borrowing
2008	3580
2009	3367
2010	3155
2011	1869
2012	2366

Currently, PUL is cooperating with following libraries for the most of ILL borrowing request via document delivery agency cooperation platform: National Library of China, Shanghai Library, and other domestic libraries (most of loaning requests handled through CASHL, CALIS, BALIS platform), Hong Kong libraries (Hong Kong University Library, Hong Kong University of Science and Technology Library), the British Library, and member libraries of OCLC.

From 2008 to 2012, the ILL requests on western book was accepted from various sources (see table 4), and most of the requests were for local libraries, especially from National Library of China.

Table4:2008-2012 Items of ILL Borrowing from different library

	ILL Borrowing
Local libraries	13834
Other domestic libraries	258
Hong Kong libraries	203
Overseas libraries	42

4. Data Analysis: ILL Data VS Circulation Data VS Holding Data

Data analysis in this study included analysis over 5 aspects. Firstly, the authors compared the ILL data and the circulation data from following four aspects: subject publication year, frequency of usage, patron's category, and tried to disclose any

relations between the utilization of internal collection and ILL requests. Lastly, the authors performed a comprehensive analysis over the collection vs circulation, and the collection vs ILL data, then made the proposals for the collection assessment and development.

Subject Distribution

The Conspectus Subject Categories was listed by usage in a descending order in Table 5. Depending on the usage ratio, all subjects can be divided into three groups.

- The first group numbered with 1-5, and the proportion of all disciplines for both lending data and interlibrary load data in group 1 is more than 7%, and the accumulative percentage of lending and interlibrary loaning is more 60%.

- The second group numbered with 6-13, these 8 subjects ILL lending ratio is from 2% to 7% respectively except the percentage of mathematics in ILL is about 1.33%, to this group, the lending data and interlibrary loan data's percentage sum about 30%.

- The third group numbered with 14-24. In this group, 11 subjects' ILL lending data and the ratio is about 2% or less except the percentage of art in ILL is 3.47%. To this group, the lending data and ILL data's percentage sum close to 8%.

These data shows that for specific disciplines, the holdings and the interlibrary loan on Western Books were in similar from some point, that means there would have a correlation on the usage between collection and ILL.

Table 5: Circulation Data and ILL Data by subject

N o.	Subject Categories	Circulation Data			ILL Data		
		Circulation Transactio ns	%	Cumu lative %	NO. of Request	%	Cumul ative %
1.	Literature	72054	17.49 %	17.49 %	1160	8.09 %	8.09%
2.	Philosophy and Religions	56062	13.61 %	31.11 %	1906	13.2 9%	21.39%
3.	Business and Economics	43242	10.50 %	41.60 %	1007	7.02 %	28.41%
4.	Politics	40320	9.79 %	51.39 %	2309	16.1 1%	44.51%
5.	History	31688	7.69 %	59.09 %	1664	11.6 1%	56.12%
6.	Physics	23908	5.80 %	64.89 %	439	3.06 %	59.18%
7.	Languages and Linguistics	22521	5.47 %	70.36 %	866	6.04 %	65.22%

8.	Mathematics	19244	4.6 7%	75.03 %	190	1.33 %	66.55%
9.	Law	16606	4.0 3%	79.06 %	911	6.35 %	72.90%
10.	Social Sciences	13529	3.2 8%	82.35 %	675	4.71 %	77.61%
11.	Industrial Technology	13039	3.1 7%	85.51 %	630	4.39 %	82.00%
12.	Culture, Science and Sports	11609	2.8 2%	88.33 %	588	4.10 %	86.11%
13.	Life Sciences	9464	2.3 0%	90.63 %	315	2.20 %	88.30%
14.	Art	6969	1.6 9%	92.32 %	497	3.47 %	91.77%
15.	Chemistry	6771	1.6 4%	93.97 %	76	0.53 %	92.30%
16.	Psychology	6219	1.5 1%	95.48 %	181	1.26 %	93.56%
17.	Astronomy and Geoscience	5254	1.2 8%	96.75 %	201	1.40 %	94.96%
18.	Medicine and Health Sciences	3638	0.8 8%	97.64 %	215	1.50 %	96.46%
19.	Environmental Science	2397	0.5 8%	98.22 %	116	0.81 %	97.27%
20.	Natural Science	2031	0.4 9%	98.71 %	148	1.03 %	98.31%
21.	Education	1779	0.4 3%	99.14 %	99	0.69 %	99.00%
22.	Geography	1639	0.4 0%	99.54 %	110	0.77 %	99.76%
23.	Marxism	1253	0.3 0%	99.84 %	20	0.14 %	99.90%
24.	General Works	641	0.1 6%	100.0 0%	14	0.10 %	100.00 %

Publication year

As shown in Figure 1, the publication year of the western book holdings/ILL requests have some commonalities. The books published in 2000-2009 have highest utilization for both categories. And the utilization of books is similar between 1990-1999 and pre 1990.

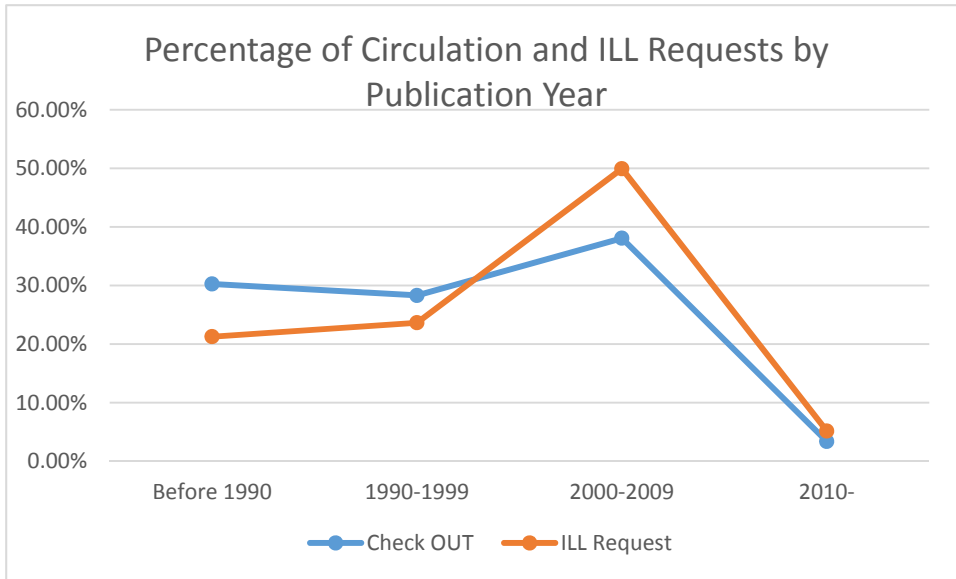


Figure 1 Percentage of Circulation and ILL Requests by Publication Year

From 2008 to 2012, the publication year of the western book holdings/ILL requests was shown in Figure 2. The histogram represents the number of Western Books checked out, and the line represents the number of ILL Request. As shown in Figure 2, the books published between 2006 and 2007 have highest utilization.

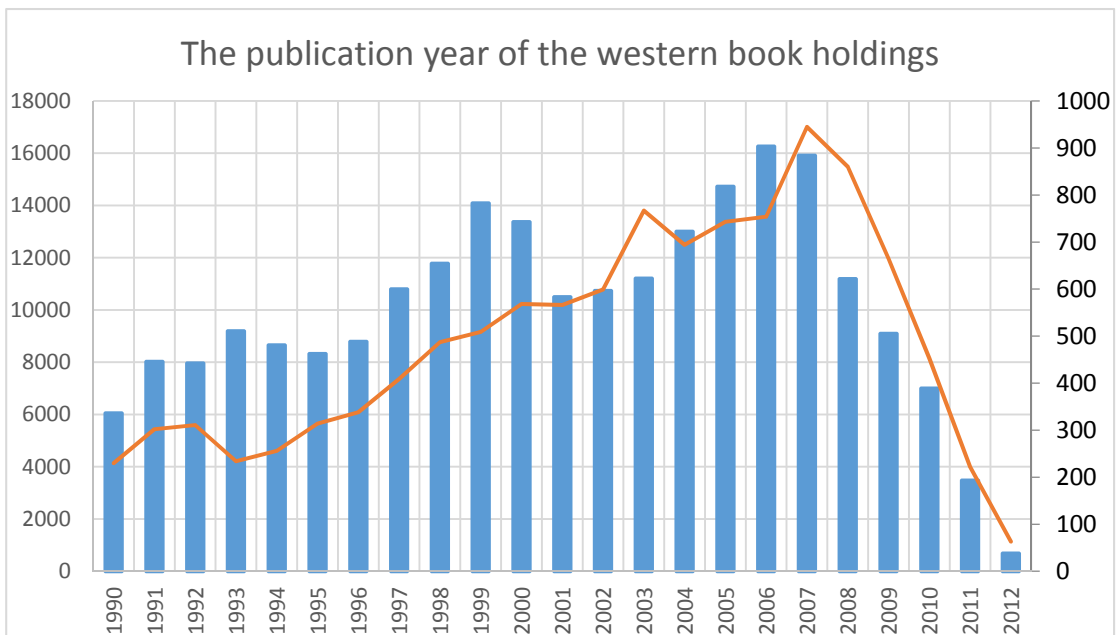


Figure2: The publication year of the western book holdings/ILL requests

Frequency

From 2008 to 2012, the loaning frequency of collection on Western Books and ILL request books was shown in Table 6. Most of the books were checked out for only one time. It counts about 41% of the collection, and 91% of ILL requests. The highest frequency of ILL request was 7 times, and the highest frequency of collection in PUL was 175 times. The average transactions per item on western book collection is 3.3, and

the average transactions per item on ILL request is 1.22

Table 6: The Frequency of Collection on Western Books/ILL Request

Frequency	Check Out		ILL	
	No. of titles	%	No. of titles	%
101-175times	2	0.0016%	--	--
71-100	6	0.0049%	--	--
61-70	12	0.0097%	--	--
51-60	24	0.0194%	--	--
41-50	68	0.0550%	--	--
31-40	192	0.1553%	--	--
21-30	824	0.6665%	--	--
11-20	5258	4.2533%	--	--
10	1416	1.1454%	--	--
9	1815	1.4682%	--	--
8	2462	1.9916%	--	--
7	3217	2.6023%	1	0.0078%
6	4312	3.4881%	4	0.0312%
5	6203	5.0177%	5	0.0390%
4	9062	7.3304%	36	0.2809%
3	13964	11.2957%	178	1.3891%
2	24021	19.4310%	979	7.6401%
1	50764	41.0639%	11611	90.6118%

Patron category

The authors listed the top 12 departments utilizing Collections/ILL request in Table 7 sorting by the loaning frequency. In the past five years, the total number of book loaning from these 12 departments in PUL was over 10000, with accumulative percentage of about 68.5%. The top 5 departments utilizing internal collection are the same top 5 utilizing ILL request. These departments include: School of Foreign Languages, Department of Philosophy, Law School Department of History, School of International Studies, Law School. This tells that to the specific patrons, the utilization of internal collection is relevant with the utilization of the ILL request.

Among the ILL requests, it was found that the patrons from the history department had highest request via ILL counting 2196. However, the number of requests in history subject was only 1664 (see Table 5). This shows that some of requested books are multidiscipline related.

Table 7: The 12 Top Usage of Collections/ILL Request by Patron's Department

Department/School/College	Check Out			ILL Request		
	Frequency	%	Cumulative %	No. of Request	%	Cumulative %
School of Foreign	63772	15.48	15.48%	2082	14.52	14.52%

Languages		%			%	
Department of Philosophy	37285	9.05%	24.54%	1538	10.73%	25.25%
Department of History	25963	6.30%	30.84%	2196	15.32%	40.57%
School of International Studies	23616	5.73%	36.57%	1117	7.79%	48.36%
Law School	23368	5.67%	42.25%	1158	8.08%	56.43%
School of Mathematical Sciences	21806	5.29%	47.54%	244	1.70%	58.14%
School of Physics	18999	4.61%	52.15%	218	1.52%	59.66%
Department of Chinese Language and Literature	18189	4.42%	56.57%	714	4.98%	64.64%
School of Electronics Engineering and Computer Science	14022	3.40%	59.97%	371	2.59%	67.22%
School of Government	12932	3.14%	63.11%	816	5.69%	72.92%
Department of Sociology	11520	2.80%	65.91%	817	5.70%	78.61%
College of Environmental Science	10646	2.58%	68.50%	249	1.74%	80.35%
Others	129759	31.50%	100.00%	3883	27.08%	100.00%

Comprehensive Analysis of Data on circulation, ILL and Collection

William Aguilar (1986) etc (Ochola, John N 2002) . developed the collection development model based on collection circulation data and ILL data. The model was used to disclose the emphasis and provide guideline for collection development by investigating circulation data and ILL data for each subject along with ratio between collection and ILL request. The core concepts of this model include PEU (Percentage of Expected Use) and RBH (Ratio of Borrowings to Holdings).

PEU represents the relationship between the circulation and holding for a specific subject ($PEU = \text{subject circulation ratio} / \text{subject holding ratio}$; Subject circulation ratio is the percentage of a subject circulation to all subject circulation; Subject ratio is the percentage of a subject holding to all subject holding). PEU is ratio of the circulation over collection for a given subject, and represents the utilization of collection for a particular subject.

RBH represents the relationships between the ILL and the holding for a

subject ,($RBH = \text{subject ILL ratio} / \text{subject holding ratio}$; Subject ILL ratio is the percentage of a subject ILL request amount to all subject ILL request amount; subject holding ratio same as PEU's). RBH shows the using status of document via ILL. RBH is ratio of ILL request over collection for a given subject, and represents the utilization of ILL.

The leverage data for both PEU and RBH is 1. With PEU and RBH higher than 1, it means more utilization of relative literature for this particular subject, and vice versa.

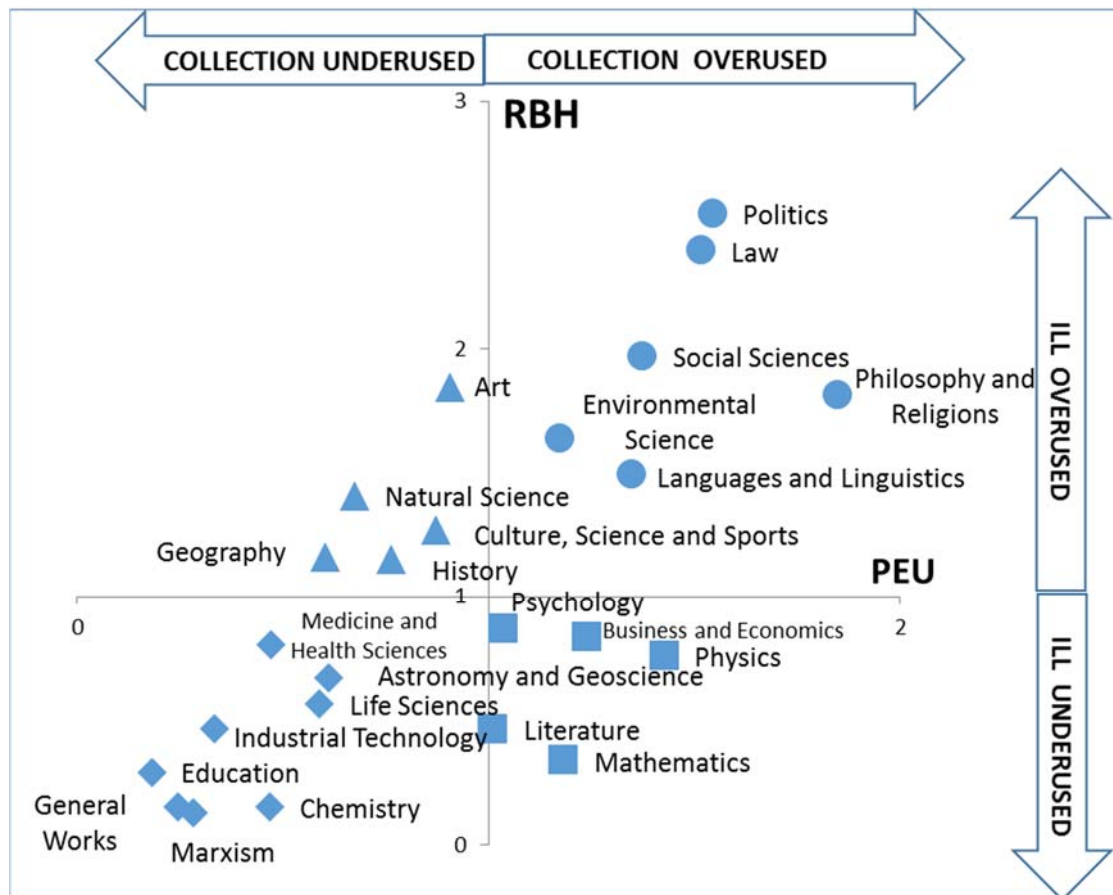


Figure 3: The RBH and PEU of ILL Request in PUL

The literature utilization could have four combinations of PEU and RBH which include:

1. High PEU and RBH meaning heavy utilization of internal collection and ILL requests (the six subjects in the first quadrant in Figure 3). These ILL literatures may be added to internal collection;

2. High PEU and low RBH meaning heavy utilization of internal collection with lighter utilization of ILL literature (the five subjects in the fourth quadrant in Figure 3). This means the internal collection has been well built without need of adding ILL into collection;

3. Low PEU and high RBH meaning heavier utilization of ILL literatures with light utilization of internal collection (the five subjects in second quadrant). This suggests re-evaluation of internal collection;

4. Low PEU and RBH meaning light utilization of both internal collection and ILL requests (the 8 subjects in third quadrant). This suggests not to add ILL requests to collection.

Based on analysis above, it was learned that there is commonality along with the differentiation on the utilization of collection and ILL for patrons of PUL. Some conclusions were summarized as follows:

- The top 5 departments have highest utilization of internal collection are the same 5 departments with highest utilization of ILL requests.
- By subject, the patrons can be grouped as high, middle and low by the utilization of borrowed books. These three groups basically have the closely utilization ratio on collection and ILL internally.
- For both collection and ILL utilization, most of the books were published in 2000-2009 with highest utilization on books published in 2006-2007.
- From utilization frequency, the identical book had been requested up to 7 times via ILL vs 175times for internal collection. And there is only about 10% of ILL items being requested 2 times or more, comparing with 60% of collection. There is a big gap.
- From the collection development model based on circulation and ILL data, the ILL requested items in following disciplines may be added to enhance the library's collection development: Philosophy and Religions, Politics, Languages and Linguistics, Law, Social Science, and Environmental Science.

5. Discuss: To Buy or Not to Buy?

ILL aims to satisfy individual patron's demand quickly. However, the library collection-building is focused on acquiring high quality collection to fulfill patrons' education and research need from a long term perspective. There are multiple approaches to provide justification and foundation of collection building by using ILL request statistic data.

When handling ILL request from patrons, there are three options: ILL service; purchase requested books directly; or ILL first and then purchase later. Different strategies can be chosen based on level of request urgency, and cost comparison of ILL and POD etc.

Strategy1: Interlibrary Loan Preferred

Generally for a specific requested book, when the cost and deliver time for interlibrary loan and purchase is comparable, then the library would prefer to buy the book directly. However, to most of the domestic libraries in China mainland, the cost and turn around time of purchase is much higher than interlibrary loan, so the requested book is preferred by ILL to satisfy patrons' need in a quick and economical way.

Table 8 shows the average cost and delivery time per acquisition. Since the ILL service shipping cost is different from area to area, in this study the cost and delivery analysis was based on areas listed in the Table. And only loaning and shipping cost was

taken into account by excluding human resource related cost.

Table 8: Cost and Delivery time of ILL/Purchase

		Per cost (Yuan)	Delivery time (Day)
ILL	Local libraries (National Library of China)	16	1-4
	Other domestic libraries	40	2-7
	Hong Kong libraries	100	7-30
	Overseas libraries	334.5	7-35
BY purchase ⁴		320.3	4-6months

And as shown in table 8, the cost per ILL increases with the inter library distance. For domestic ILL, the cost is lower than the purchase. However, for oversee ILL, the purchase cost is just a little bit lower. It also shows that the ILL delivery time is various depending on the inter-library distance and shipping method. As shown in the table, the ILL delivery time is from 1 to 35 days with purchase of 4 to 6 months. Obviously the ILL is a much faster way to satisfy patron's request, and this is a critical factor for the ILL preference.

Stratege2: Purchase Preferred

Based on the circulation statistics of last 5 years, the average borrowed time per item is 3.3 for internal collection at PUL. Therefore, when a book was requested via ILL more than 3 times, and the book is falling in the scope of library collection, purchase should be a preferred option. Nevertheless, purchase can also be preferred for an international ILL request with longer delivery time and higher handling cost.

Stratege3: Purchase List Suggested by Historical ILL Data

The historical ILL data can provide detailed patron's need for long term library collection development. Using the collection development model based collection circulation data and ILL data, it already prove that purchase is more suitable for certain subjects. The ILL department should strengthen communication and contact with the acquisition department, analyze ILL data annually, and provide the item list to be added to collection development. What's more, ILL staff can directly participate in process of purchase if necessary.

6. Conclusion

⁴ 2008-2012, The total funding on foreign language books was 23690000 Yuan, the number of purchased book is73965.

In recent years, foreign libraries have been discussing and investigating to replace ILL services with POD. Whether this is applicable to domestic libraries, this really depends on realistic situations.

1. For literatures available nationwide, currently the ILL approach is the most economical way due to the low cost of domestic ILL service.

2. For literatures only available at foreign libraries, the best approach would be the combination of POD and ILL service. Based on the RBH and PEU analysis above, we determine that POD is more suitable for following subject need: Philosophy and Religions, Politics, Languages and Linguistics, Law, Social Science, and Environmental Science. For these particular subject need, it has unique characteristics of relatively slower update, longer literature utilization cycle, and higher utilization ratio which can be used as the justification of collection development supplement. For other subjects with quicker update and lower utilization, ILL is more suitable.

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